

## WHAT IS CLAIMED IS:

1. A method of making a thin film explosive detonator comprising:

forming a substrate layer;

depositing a metal layer in situ on the substrate layer; and

reacting the metal layer to form a primary explosive layer.

2. The method of claim 1 wherein the substrate layer comprises silicon.

3. The method of claim 1 wherein the metal layer comprises one of copper, nickel, cadmium and silver.

4. The method of claim 1 wherein the metal layer is reacted with at least one of a gas and liquid phase reactant.

5. The method of claim 1 wherein the step of depositing a metal layer in situ on the substrate layer includes depositing the metal layer by at least one of plasma vapor deposition, chemical vapor deposition, electroplating, sputtering and sintering.

6. The method of claim 1 further comprising depositing an organic flyer layer on top of the primary explosive layer.

7. The method of claim 1 further comprising forming a barrel in the substrate layer.

8. An explosive train formed using the method of claim 1, comprising:  
a fixed initiator element comprising a base layer, an unreacted metal substrate layer and a primary explosive layer;  
an acceptor explosive; and  
a mobile slider element that is movable between an unarmed position that is out of line with the fixed initiator element and the acceptor explosive and an armed position that is in line with the fixed initiator element and the acceptor explosive;

the mobile slider element comprising a base layer, an unreacted metal substrate layer and a primary explosive layer, the base layer including a barrel formed therein, an open end of the barrel being adjacent the acceptor explosive when the mobile slider element is in the armed position;

5        wherein the primary explosive layer of the mobile slider element is adjacent the primary explosive layer of the fixed initiator element when the mobile slider element is in the armed position.

9. The explosive train of claim 8 wherein a combined amount of primary explosive in the  
10       mobile slider element and the fixed initiator element is no greater than about ten milligrams.

10. The explosive train of claim 8 wherein a combined size of the mobile slider element and the fixed initiator element is no greater than about one cubic millimeter.

15       11. An explosive train formed using the method of claim 1, comprising:

             a fixed initiator element comprising a base layer, an unreacted metal substrate layer and a primary explosive layer;

             an acceptor explosive; and

             a mobile slider element that is movable between an unarmed position that is remote from  
20       the fixed initiator element and the acceptor explosive and an armed position that adjacent the fixed initiator element and the acceptor explosive;

             the mobile slider element comprising a base layer, an unreacted metal substrate layer and a generally wedge shaped primary explosive layer, the base layer including a barrel formed therein, an open end of the barrel being adjacent the acceptor explosive when the mobile slider  
25       element is in the armed position;

             wherein a narrow end of the generally wedge shaped primary explosive layer of the mobile slider element is adjacent an end of the primary explosive layer of the fixed initiator element when the mobile slider element is in the armed position.

30       12. The explosive train of claim 11 wherein a combined amount of primary explosive in the

mobile slider element and the fixed initiator element is no greater than about ten milligrams.

13. The explosive train of claim 11 wherein a combined size of the mobile slider element and the fixed initiator element is no greater than about one cubic millimeter.

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14. A detonator formed using the method of claim 1, comprising:

a base layer;

a primary explosive layer disposed on one side of the base layer, the primary explosive layer having a wedge shaped portion and a rectangular shaped portion;

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a plurality of through holes formed in the base layer adjacent the rectangular shaped portion of the primary explosive layer, each through hole including a primary explosive layer on its interior surface;

an organic flyer plate disposed on a side of the base layer opposite the primary explosive layer and covering the through holes formed in the base layer.

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15. The detonator of claim 14 wherein an amount of primary explosive is no greater than about ten milligrams.

16. The detonator of claim 14 wherein a size of the detonator is no greater than about one cubic millimeter.

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